

From: Berndt,Cindy

Sent: Monday, November 19, 2007 9:18 AM

To: Weeks,Richard; Golden,James; Sydnor,James; Faha,Thomas; Darton,Terry; Thompson,Tamera; Kiss,Michael

Subject: FW: Alexandria's Comments on Mirant PRGS's SOP
FYI.

Cindy M. Berndt
Director, Regulatory Affairs
DEQ, 629 East Main Street
P.O. Box 1105
Richmond, VA 23218
ph: 804-698-4378
fax: 804-698-4346
cmberndt@deq.virginia.gov

-----Original Message-----

From: Malay Jindal [mailto:jindalm@earthlink.net]

Sent: Saturday, November 17, 2007 6:39 PM

To: apcb; Paylor,David

Cc: William.Skrabak@alexandriava.gov; Maureen Barrett; Jindal, Malay

Subject: Alexandria's Comments on Mirant PRGS's SOP

Virginia State Air Pollution Control Board members and Director Paylor,

Attached please find comments of the City of Alexandria, Virginia, regarding the State Operating Permit for Mirant Potomac River Generating Station proposed by Virginia DEQ on October 19, 2007. Should you have any questions regarding these comments, please contact Bill Skrabak at (703) 519-3400, ext. 163.

Regards,

Malay Jindal
MACTEC Federal Programs, Inc.
(919) 474-3582



DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES

Division of Environmental Quality

P.O. Box 178 – City Hall
Alexandria, Virginia 22313
<http://alexandriava.gov/tes/DEQ/>

November 17, 2007

Richard D. Langford, Chairman
Bruce C. Buckheit
John N. Hanson
Hullihen W. Moore
Vivian E. Thomson
State Air Pollution Control Board
Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

David K. Paylor, Director
Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

**Re: Proposed Stationary Source Permit to Operate Dated October 19, 2007
Mirant Potomac River Generating Station, Alexandria, Virginia**

Honorable Board Members and Director Paylor:

The City of Alexandria ("Alexandria") appreciates the opportunity to provide comments on the above-referenced State Operating Permit ("SOP") for Mirant's Potomac River Generating Station ("PRGS") located in Alexandria, Virginia. As proposed, the SOP contains several crucial deficiencies that must be addressed prior to the issuance of a final permit. This letter discusses each of those deficiencies, and urges the State Air Pollution Control Board ("Board") and Virginia Department of Environmental Quality ("VDEQ") to resolve them in the final SOP. In addition, the letter addresses the seven questions for which the Board requested public comment.

Summary of Alexandria's Comments

1. It is imperative that impacts of PM_{2.5} emissions from the PRGS be assessed and NAAQS-compliant emission limits be established in the permit.

2. Based on optimized operation of the source and the pollution control measures, and compliance with the NAAQS, the limits in the SOP must not exceed the following:

SO ₂	< 0.30 lb/MMBtu	(trona optimization)
NO _x	< 0.22 lb/MMBtu	(LNB/SOFA optimization)
PM	< 0.03 lb/MMBtu	(ESP performance)
PM ₁₀	< 0.02 lb/MMBtu	(ESP performance)
PM _{2.5}	< 0.003 - 0.012 lb/MMBtu	(NAAQS compliance)
CO	< 0.20 lb/MMBtu	(BACT)
Hg	< 37 lb/yr	(actual baseline emissions)
Coal sulfur	< 0.9 wt%	(current limit for PRGS)

3. Short term (hourly and daily) emissions are arbitrary and unreasonable. They must be revised to reflect actual performance and operations at the PRGS.
4. Annual emissions must not exceed baseline emissions during the most recent 24 month period, i.e., Fall 2005 through Fall 2007. For PM₁₀ and PM_{2.5}, the annual average baseline emissions during August 2005 through June 2007 are estimated using stack test data to be 135 and 116 tons/year, respectively.¹
5. Baghouses must be required on all five boilers at the PRGS.
6. CEMS for CO and PM must be required on all five boilers as soon as possible. The PM₁₀ and PM_{2.5} fractions identified during the stack tests required by the SOP must be used in conjunction with the PM CEMS data for continuous compliance purposes.
7. Reference to trona as a PM control must be removed from the SOP.
8. All NSR issues must be promptly resolved. This includes (1) past NSR violations for LNB, SOFA and trona installations, (2) increase in the maximum heat input rates as compared to the rated capacities as listed in PRGS's current SOP, and (3) use of an alternate sorbent other than trona. The SOP must not be used to pre-authorize the use of sodium bicarbonate or another alternate sorbent without thorough evaluation and a pre-construction permit. Also, a pre-construction NSR permit must be issued for the stack merger project if Mirant wishes to pursue this project.
9. The SOP must be practically enforceable and require adequate monitoring, recordkeeping and reporting requirements as follows:

¹ As of the date of this letter, data from the PRGS was only available up to June 2007 on the EPA's airmarkets website. Upon availability of plant data for the quarter ending September 2007, Alexandria recommends that full 24 months of data be used during Fall 2005 through Fall 2007. Data prior to August 2005 are not appropriate for baseline estimation because emissions during that period were shown to violate NAAQS.

- a. Heat input rates must be enforceable. Coal firing rates and trona feed rates (tons/hr) must be recorded for each boiler.
 - b. Stack tests for PM₁₀ and PM_{2.5} must be required every six months for the first two years. Upon demonstration of continuous compliance, the staggered schedule for boiler stack tests in Condition 37 of the proposed SOP may be followed.
 - c. Emission limits that apply during all operating scenarios must be specified. Multiple operating scenarios with different limits represent intermittent controls and compliance determination under multiple scenarios is cumbersome.
 - d. All plant data, including monitoring and testing records, must be made available to the public in a readily-accessible manner without the need for a FOIA request.
10. Limits and compliance requirements of CAIR and CAMR, which will take effect soon after the SOP is issued, must be identified in the SOP.

The following sections provide more detailed discussions, and technical and regulatory justifications for the above comments.

I. PM_{2.5} Impacts Must be Assessed

Alexandria has previously provided comments to VDEQ regarding the need to evaluate PM_{2.5} emissions from the PRGS. PM_{2.5} is of primary interest to the residents of Alexandria and its emissions from PRGS were initially raised as a concern in 2005. It is a regulated criteria pollutant for which the NAAQS have been established.

Alexandria's comments herein focus mainly on the direct component of this facility's PM_{2.5} impacts, i.e., its primary components, as defined by US EPA to mean "*solid particles emitted from an air emissions source or activity, or gaseous emissions or liquid droplets from an air emissions source or activity which condense to form particulate matter at ambient temperatures.*" Results of air quality modeling of each of the primary and secondary components of PM_{2.5} indicate that a focus on strictly the primary PM_{2.5} impacts at close-in locations, for the immediate purposes of this SOP, will provide substantial assurance that this facility's total PM_{2.5} impacts at close-in distances comply with Virginia's PM_{2.5} standards.² The PRGS's impacts due to its indirect, i.e., secondary, components on regional levels of PM_{2.5} also fall under the responsibility of the facility's owner/operators. However, these can be addressed within Virginia's forthcoming regional PM_{2.5} attainment plans.

Regulatory Requirement

Virginia regulations at 9 VAC 5-30 include PM_{2.5} within the definition of primary ambient air quality standards (AAQS). A primary AAQS defines the level of air quality which, allowing an adequate margin of safety, is necessary to protect public health.

² "CALPUFF Model Runs," Sullivan Environmental Consulting, April 2007

Virginia's 9 VAC 5-80-1180.A.3 prohibits the issuance of a permit unless the facility has been *"designed, built and equipped to operate without preventing or interfering with the attainment or maintenance of any ambient air quality standard (AAQS) and without causing or exacerbating a violation of any applicable ambient air quality standard."* Furthermore, U.S. EPA has documented its support for the protection of all NAAQS when it stated that it *"will not support any continued full or partial operation of the Potomac River without verification from EPA experts that there will not be any modeled exceedances of the NAAQS caused by emissions from the plant."* Letter from Donald S. Welsh, U.S. EPA Region III, to James P. Moran, U.S. Congress, October 21, 2005. However, as discussed below, the proposed SOP sets PM_{2.5} emission limits that violate this provision of Virginia law.

PM_{2.5} SIP Development

The Metropolitan Washington Air Quality Committee ("MWAQC") and VDEQ are currently in the process of developing the State Implementation Plan ("SIP") to address PM_{2.5} nonattainment in the metropolitan Washington area, which includes the City of Alexandria. The SIP is due in April 2008, and is expected to be released for public comment in December 2007 or January 2008. As a part of the SIP development, VDEQ must address any "hot spots" within the nonattainment area. The PRGS is the single largest source of primary and secondary PM_{2.5} emissions located within the nonattainment area of Northern Virginia. Dispersion modeling to date demonstrates that a "hot spot" exists in the area surrounding the facility and that the PRGS contributes significantly to the nonattainment in Alexandria and metropolitan Washington. Absent the resolution of this "hot spot," any SIP developed by MWAQC and VDEQ would be inadequate.

It is important to note that EPA's Clean Air Act Scientific Advisory Committee ("CASAC") recommended³ that the annual PM_{2.5} NAAQS be lowered to 13-14 µg/m³, as compared to the current NAAQS of 15 µg/m³. Based on this recommendation by CASAC, and the growing evidence of PM_{2.5}-related health effects, the MWAQC decided to continue the development of the SIP and submit it by the April 2008 due date despite recent data that shows marginal compliance with the annual NAAQS. Under the SIP, it is expected that compliance determination would be based on data from the years 2007, 2008 and 2009. Therefore, this is the most appropriate time for VDEQ to address PRGS's compliance with the PM_{2.5} NAAQS and resolve the "hot spot" around PRGS.

VDEQ has previously indicated that the SIP will address the unresolved issue of PM_{2.5} impacts from PRGS. However, the emission limits proposed in the SOP for PRGS appear to run counter to the goal of achieving attainment. Dispersion modeling of PRGS's primary PM_{2.5} emissions conducted by Alexandria shows that PRGS will cause egregious violations of the NAAQS at the emission limits proposed in the SOP. Alexandria urges VDEQ to immediately address primary impacts of PM_{2.5} in the local area within this SOP proceeding, as we describe here, yet also include an analysis of PRGS's PM_{2.5} precursor emissions in the SIP and propose measures necessary to

³ Letter dated September 29, 2006 from CASAC to EPA Administrator Stephen Johnson (EPA-CASAC-LTR-06-003)

minimize these emissions to help achieve the ultimate goal of regional attainment. Local-scale NAAQS attainment, while statutorily required, can only propitiously serve the SIP for regional attainment.

VDEQ's current approach of using PM₁₀ as a surrogate for addressing PM_{2.5} impacts is simply inadequate given the nonattainment status of the region. There is ample guidance, as well as state-of-the-art tools, currently available (see discussions below) to address PM_{2.5} emissions independently of PM₁₀. The long-term health of the citizens living in Northern Virginia should not be further compromised by the timing of the promulgation of EPA's guidance. VDEQ must adopt a proactive, and not a reactive, approach to addressing this issue. One such approach would be for VDEQ to establish significant impact levels ("SILs") for PM_{2.5} and to apply these SILs for evaluating modeled impacts in the area surrounding the PRGS, as several other states have done.

Modeling Tools are Available Now

Dispersion models described in U.S. EPA modeling guidelines are available now for modeling PM_{2.5} emissions. Specifically, AERMOD is capable of modeling primary PM_{2.5} emissions for local impacts, and CALPUFF can model both primary and secondary PM_{2.5} emissions for impacts on regional receptors. These are the current state-of-the-art models and are well-suited for application at the PRGS. U.S. EPA has no plans to develop any new dispersion models for estimating PM_{2.5} impacts. Any future modeling analysis conducted for PRGS would most likely use one or both of these models. Therefore, Alexandria does not believe there is any reason to delay PM_{2.5} modeling. On the contrary, any deferral of this analysis would only delay the eventual discovery of NAAQS violations in the same manner as the much-delayed discovery of other NAAQS violations in 2005. Alexandria urges the Board and VDEQ to require PM_{2.5} modeling as a part of both the issuance of this SOP as well as the SIP development.

Ambient monitoring alone is inadequate to establish NAAQS compliance for PRGS and cannot substitute for modeling. Dispersion modeling evaluates ambient impacts on a comprehensive receptor grid, while monitoring can only provide limited coverage. Therefore, all NAAQS compliance, including compliance for the limits in SOP and any future compliance determination, must be based on dispersion modeling.

Federal Guidance Supports PM_{2.5} Modeling

Some states have adopted the policy described in EPA's Stephen D. Page memorandum⁴ that describes a PM₁₀-as-surrogate approach for federal New Source Review ("NSR") proceedings. However, it is important to note, as the memorandum itself declares, that the *"statements in [that] policy guidance do not bind State and local governments and the public as a matter of law."* Furthermore, this PM₁₀-as-surrogate approach lacks any specificity in the procedures to protect the PM_{2.5} NAAQS, as is required, through an air quality compliance demonstration. Extrapolation of the Page memorandum's guidance to

⁴ "Implementation of New Source Review Requirements in PM -2.5 Nonattainment Areas," Stephen D. Page, April 5, 2005 (available at <http://www.epa.gov/oar/nsr/documents/nsrmemo.pdf>)

an air quality compliance demonstration, as VDEQ has done to date, has resulted in a proposed SOP that will allow PRGS's emissions to cause or contribute to a NAAQS violation for PM_{2.5}, a contravention of Virginia regulations.

Several federal rules pertaining to PM_{2.5} maintenance and attainment procedures that are more recent in their issuance than the Page memorandum provide support for permitting action that protects the PM_{2.5} NAAQS through an air quality compliance demonstration which is specific to PM_{2.5}. First, the Clean Air Fine Particle Implementation Rule, which became final on April 25, 2007, states that upon “*promulgation of this final rule, the EPA will no longer accept the use of PM₁₀ emissions information as a surrogate for PM_{2.5} emissions information given that **both pollutants are regulated by a National Ambient Air Quality Standard and are therefore considered regulated air pollutants***” (emphasis added). Additionally, EPA's proposed rule for Prevention of Significant Deterioration for PM_{2.5}⁵ proposes three different levels of significant impact levels, i.e., thresholds designed specifically to address the PM_{2.5} NAAQS, to which a PM_{2.5} source's impacts can be limited in order to demonstrate that its impacts will not cause or contribute to a violation of the PM_{2.5} standards.

The table below shows several federal guidance documents which imply or explicitly describe the acceptability of application of a Gaussian dispersion model such as AERMOD to estimate a facility's local-scale impacts of primary PM_{2.5}.

EPA Guidance Documents Acknowledging the Acceptability of a Gaussian Model for Determining Primary PM_{2.5} Impacts from Sources

Document	Guidance
Prevention of Significant Deterioration (PSD) for Particulate Matter Less than 2.5 Micrometers (PM _{2.5})—Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC); Proposed Rule ⁽¹⁾	<i>“We have also provided approved air quality models and guidelines for sources to use to project the air quality impact of each pollutant (over each averaging period)...”</i> US EPA's Guideline on Air Quality Models is referenced, which includes AERMOD as a recommended model.
Appendix B - Local-Scale Assessment of Primary PM _{2.5} for Three Urban Areas ⁽²⁾	AERMOD is applied in “ <i>[l]ocal-scale air quality modeling ...to examine the spatial variability of direct PM_{2.5} concentrations associated with emissions of primary PM_{2.5}...</i> ”
Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM _{2.5} , and Regional Haze ⁽³⁾	<i>“...while dispersion models may not be an appropriate tool for determining secondary PM_{2.5} concentrations, they work well for use in determining local primary PM_{2.5} impacts in a small area.”</i>

(1) Federal Register (72 FR 54111): <http://www.epa.gov/fedrgstr/EPA-AIR/2007/September/Day-21/a18346.pdf>

(2) EPA's Support Center for Regulatory Atmospheric Modeling: http://www.epa.gov/scram001/modelingapps_disp.htm

(3) EPA's Support Center for Regulatory Atmospheric Modeling: http://www.epa.gov/scram001/guidance_sip.htm

⁵ Federal Register, September 21, 2007, 40 CFR Parts 51 and 52, Prevention of Significant Deterioration (PSD) for Particulate Matter Less than 2.5 Micrometers (PM_{2.5}) – Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC); Proposed Rule.

Modeling Requirements of Other States

Several states have adopted policies for PM_{2.5} permitting that agree with Alexandria's approach. In several of these states, permit applications have been processed under these policies, and permits stipulating PM_{2.5} emission limitations have been issued. Correspondence with these states is summarized in the table below.

Guidance from States Requiring PM_{2.5} Modeling

State	Elements of PM _{2.5} Permitting Procedures	Comments
Connecticut⁽¹⁾	<ul style="list-style-type: none">• SILs of 0.3 µg/m³ (annual) and 2.0 µg/m³ (24-hr)• Background based on 3-yr averages of annual and 98th percentile 24-hour values from existing PM_{2.5} network• Modeled 3-yr average of maximum 8th highest 24-hr and annual values added to background and compared to PM_{2.5} NAAQS	"AREMOD [sic] has been run and used to demonstrate compliance with the new interim PM _{2.5} policy in a couple of cases so far." Permits, if issued yet, would "contain a PM _{2.5} specific emission limitation."
New Jersey⁽²⁾	<ul style="list-style-type: none">• SILs of 0.3 µg/m³ (annual) and 2.0 µg/m³ (24-hr)• Only direct PM_{2.5} emissions addressed• Must reduce impacts below the SIL if violation of PM_{2.5} NAAQS is predicted	Several permit proceedings have abided by written policy to date, and agency has stipulated PM _{2.5} limits within several permits.
New York⁽³⁾	<ul style="list-style-type: none">• SILs of 0.3 µg/m³ (annual) and 5.0 µg/m³ (24-hr)• Requires applicant to demonstrate compliance for both primary and secondary components• Air quality analysis must provide expected contribution to annual and 24-hour ambient concentrations	Policy has been implemented.
Michigan⁽⁴⁾ Pennsylvania⁽⁵⁾	<ul style="list-style-type: none">• SILs of 5.0 µg/m³ (24-hr)	Sources obtaining permits are complying with PM _{2.5} standard by demonstrating that their impacts are below the specified SIL for PM _{2.5}

(1) Correspondence with J. Catalano, CT DEP, Nov. 7, 2007

(2) Correspondence with Gregory John, NJ DEP, Nov. 5, 2007

(3) Correspondence with Bob Gaza, NYSDEC, Nov. 1, 2007

(4) Correspondence with James Haywood, Senior Meteorologist, relayed by Lori Myott, Senior Engineer, MI DEQ, Nov. 9 and Nov. 15, 2007

(5) Correspondence with Mr. Yunger, PA DEP, Jul. 18, 2007

Proposed PM_{2.5} Limits are Not NAAQS-Protective

Alexandria has applied AERMOD to calculate PM_{2.5} impacts from this facility in the same manner as applied for PRGS's other criteria pollutants, i.e., PM₁₀, CO, NO_x and SO₂. Even assuming stack emissions that are equivalent to a level that can be achieved by this facility's ESPs, i.e., emissions lower than the limits in the proposed SOP, results show that this facility's maximum potential impacts contribute to severe exceedances of Virginia's PM_{2.5} standard. At the PM_{2.5} emission levels allowed by the proposed SOP, the ambient impacts are far greater.

Despite VDEQ's commitment to address this pollutant and despite the availability of the models necessary to estimate PM_{2.5} impacts in the ambient air, no such analysis has been conducted to date. At the least, Alexandria requests that primary PM_{2.5} emissions should

be quantified and modeled, and appropriate emission limits should be established in the SOP. Alexandria's modeling results demonstrate egregious violations of the PM_{2.5} NAAQS for the proposed operations. The following table shows the modeled 24-hour average impact due to primary stack emissions alone for one of the operating scenarios in the proposed SOP.

**Modeled Primary PM_{2.5} Impacts from PRGS for Boilers Alone
(Five-Stack Configuration)**

Modeled Scenario	Averaging Period	Modeled PM_{2.5} Rate (lb/MMBtu)	Modeled Impacts on Marina Towers (µg/m³)	Monitored Background⁽³⁾ (µg/m³)	Total Impact (µg/m³)	24-Hr NAAQS (µg/m³)
3 Base Boilers 3, 4 & 5 at min load, 24 hrs/day	24-hr	0.035	21.7 ⁽¹⁾	34.1	55.8	35
2 Base Boilers 4 & 5 at min load, 24 hrs/day	24-hr	0.055	22.1 ⁽²⁾	34.1	56.2	35
2 Base Boilers 4 & 5 at min load, 24 hrs/day	Annual	0.055	3.5 ⁽²⁾	14.2	17.7	15

- (1) For one year modeling (2001) of primary stack emissions, assuming PM_{2.5} emissions equal 64% of PM emissions at 0.055 lb/MMBtu. The 64% ratio is based on the December 2006 stack test data. The listed impact is the highest of the eighth-highest (98th percentile) modeled value from AERMOD modeling using Mirant's modeling files posted on VDEQ's ftp site with no change, except to allow calculation of the 8th highest impacts.
- (2) For five years of modeling (2001, 2003-2006) of primary stack emissions, assuming PM_{2.5} emissions are equal to the rate allowed by the SOP, i.e., 0.055 lb/MMBtu. The listed 24-hour impact is the highest of the 3-year averages of eighth-highest (98th percentile) modeled values, and the annual impact is the highest 3-consecutive-year average, from AERMOD modeling using Mirant's modeling files posted on VDEQ's ftp site with no change, except to allow calculation of the 8th highest impacts.
- (3) The 24-hr value is the 3-year average of the 8th highest daily observations, and the annual value is the 3-year average, for years 2004 – 2006 from VDEQ's Aurora Hills monitor. Data provided by Mr. Michael Kiss of VDEQ.

Even without the inclusion of (1) the fugitive PM_{2.5} emissions from the PRGS's coal and ash handling operations, (2) the effect of secondary PM_{2.5} formation due to precursor emissions from PRGS, and (3) PM_{2.5} emissions from other nearby interacting sources, the predicted impacts far exceed the NAAQS. The above table also may not reflect the worst-case impacts from all operating scenarios listed in the proposed SOP. Furthermore, the table shows that if the PM_{2.5} emissions of 0.055 lb/MMBtu are allowed, as proposed in the SOP, the modeled impacts are even greater. These high impacts require scrutiny by the Board and an analysis of pollution control and impact mitigation measures. Given the high impacts, primary PM_{2.5} emissions from each boiler must be reduced to a level much lower than 0.01 lb/MMBtu in order to demonstrate NAAQS compliance.

The table below shows the calculated PM_{2.5} emission rates at which the PRGS's boilers will not cause or contribute to an exceedance of the NAAQS, i.e., the impacts at these emission rates will be below the PM_{2.5} significant impact levels proposed by U.S. EPA (September 21, 2007). AERMOD results for PM_{2.5} indicate that compliance with the 24-hour NAAQS will substantially assure compliance with the annual NAAQS.

Calculated PM_{2.5} Emission Limits Necessary for NAAQS Compliance

Averaging Period	Proposed SOP Limit (lb/MMBtu)	Modeled PM _{2.5} Impact at Proposed SOP Limit ⁽¹⁾ (µg/m ³)	U.S. EPA's Proposed PM _{2.5} SILs (µg/m ³)	Calculated PM _{2.5} Limit for Impacts to be Below SIL (lb/MMBtu)
24-hr	0.055	22.1	5.0	0.012
			4.0	0.010
			1.2	0.003
Annual	0.055	3.5	1.0	0.016
			0.8	0.013
			0.3	0.005

(1) Results for “2 Base” case, i.e., assuming Boilers 4 and 5 running at minimum load for 24 hours per day. Other scenarios must be evaluated to identify the worst-case impacts.

Alexandria believes that installation of baghouses, possibly combined with some operational restrictions at PRGS, will reduce PM_{2.5} emissions to a level necessary for NAAQS compliance. In the absence of baghouses, substantial curtailment of operations is required. Therefore, it is evident that Conditions 23 through 28 of the proposed SOP must be modified to reflect the required PM_{2.5} emission limitations for all boilers.

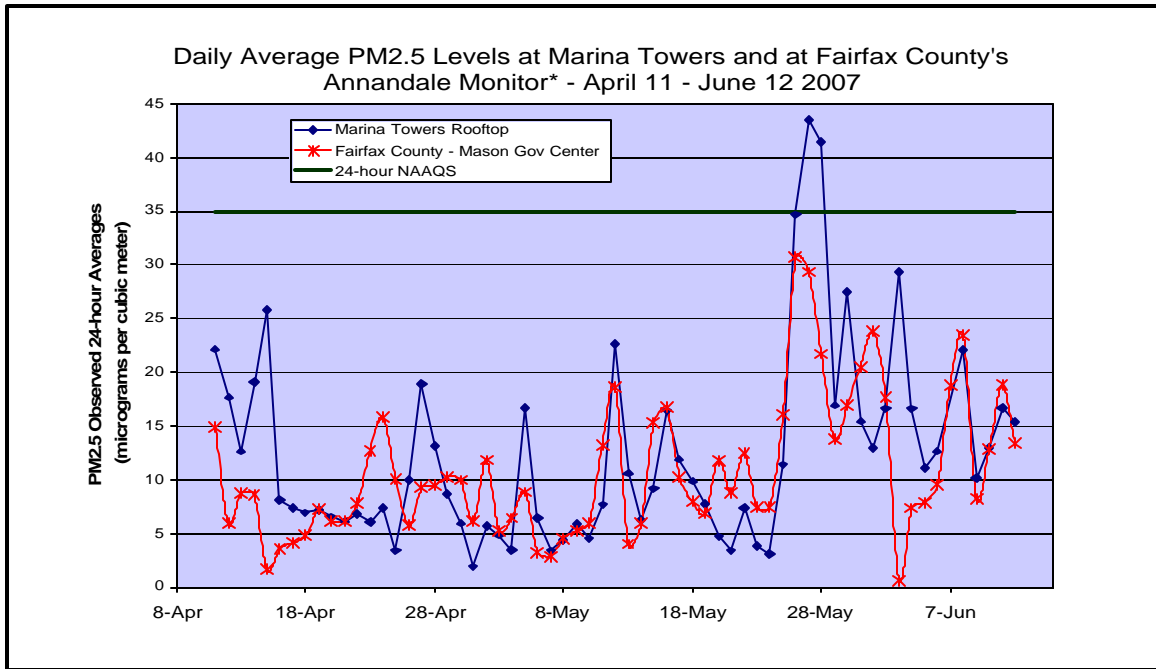
Impacts of Fugitive Emissions

Alexandria’s analysis of AERMOD results for fugitive sources also indicate that maximum impacts from the coal and ash yard sources would contribute a substantial PM_{2.5} impact at low-level receptors, even without consideration of impacts from diesel engines’ emissions of truck traffic from ash hauling, which are also PRGS’s responsibility to control and mitigate if necessary. The impacts from the fugitive sources should be fully evaluated within the PM_{2.5} impacts assessment, just as the facility’s PM₁₀ analysis has done to date. Potential mitigation measures for coal and ash yard sources include (1) full enclosure maintained under negative pressure for the ash unloading operations, or as an alternate, a fully enclosed pneumatic system for ash handling, (2) reducing the footprint of the coal pile to that modeled by Mirant and limiting the height of the coal pile to no more than the height of the screen fence, and (3) particulate matter traps on mobile source exhausts, when these are included. The emission problems with the ash unloading operations have been evident on a routine basis at the PRGS, including during a recent VDEQ inspection on October 4, 2007 in which the inspectors “*observed a large plume of fugitive dust emissions escaping from the ash unloading area.*”

Fugitive emissions from ash handling operations have increased since the trona injection system was installed at the PRGS. At 0.9% sulfur in coal and trona use rate at a stoichiometric ratio of 2.0, Alexandria estimates that an additional 11 lb/MMBtu of ash is produced from trona alone compared to about 8 lb/MMBtu of ash from the coal. Consequently, the amount of ash produced by PRGS has more than doubled due to trona use. The watering system currently in use during ash unloading is simply inadequate to control the amount of fugitive dust generated. An enclosure with negative pressure or pneumatic handling of ash is necessary for this operation.

Alexandria's Monitoring Results

Alexandria has also collected several months of ambient PM_{2.5} data at the roof of Marina Towers during 2007. The following chart is a summary of the monitored concentrations, along with simultaneous data from regional monitors. In addition, the table below shows more detailed monitoring data during three days in May 2007 when concentrations at Marina Towers approached or exceeded NAAQS. The data shows that concentrations at Marina Towers often exceed the regional values and in some cases exceed the NAAQS level. These data further enforce the need to evaluate and mitigate PM_{2.5} impacts from the PRGS.



Monitor Location		Daily Average PM _{2.5} Levels (µg/m ³) (NAAQS = 35 µg/m ³)		
		May 26, 2007	May 27, 2007	May 28, 2007
Arlington Co. FRM1	S. 18 th and Hayes St.	--	29.5	--
Arlington Co. FRM2	S. 18 th and Hayes St.	--	29.8	--
Franconia	Lee Park, Telegraph Rd	29.9	25.0	16.0
Annandale (Fairfax Co.)	6507 Columbia Pike	--	29.5	--
Annandale (Fairfax Co.)	6507 Columbia Pike	30.7	29.3	21.7
McLean	1437 Balls Hill Road	--	25.9	--
Ashburn	38-1 Broad Run HS	--	24	--
Marina Towers	Rooftop	34.7	43.4	41.4

Baghouses are Required to Adequately Control PM Emissions

The overwhelming evidence of PRGS's high impacts and the preponderance of data linking PM_{2.5} to serious health effects, up to and including premature deaths, require the

Board and VDEQ to take a proactive stance towards minimizing emissions from this facility and mitigating the adverse impacts. Beyond the available regulatory framework, the Board also has the general duty to protect public health and is authorized to use discretion in the interest of protecting public health and the environment. In a permitting action such as the issuance of this SOP, Virginia law at Title 10.2, § 1307.E, authorizes the Board to consider the threat caused by any activity due to the “*character and degree of injury to, or interference with, safety, health, or the reasonable use of property*” and the “*scientific and economic practicality of reducing or eliminating the discharge resulting from such activity*” and balance it with the “*social and economic value of the activity.*” Alexandria urges the Board to use its discretionary authority to critically evaluate these health effects and mandate the reduction of particulate matter emissions from PRGS. The harm caused by PRGS is significant, and exacerbated by the intense residential development around the plant, while the value of the plant's service is diminished from that period when Washington D.C. relied on its output to meet energy reliability needs. Given that it is feasible and practical to control and monitor PM_{2.5} emissions from the PRGS, Alexandria requests that the Board should exercise a broad scope of review in this permitting action.

Analysis conducted by Alexandria to date shows that baghouses are necessary on all five boilers in order to mitigate the adverse health-related impacts from PRGS. Alexandria believes that this is the only way for the PRGS to reduce its particulate matter emissions sufficiently to comply with NAAQS and alleviate the health impacts. Alexandria also believes that baghouses would have likely been required if PRGS had properly applied the major NSR regulations and secured a construction permit prior to the installation of the trona injection system. Alexandria requests the Board to earnestly consider the benefits of baghouse installation at PRGS. Not only will baghouses reduce particulate matter emissions, they will enhance the performance of trona in reducing SO₂ and acid gas emissions, and will also aid in the reduction of mercury emissions. Baghouses will also help shave the peak 5-minute SO₂ concentrations at nearby receptors, which is a concern that led the Agency for Toxic Substances and Disease Registry (“ATSDR”) to conduct an ambient monitoring study in the area surrounding the PRGS. The benefits of this multi-pollutant control far exceed the cost of the baghouses.

II. Pollution Control Measures Must be Optimized

Regardless of the level of operations at the PRGS, the use of pollution control measures should be optimized to achieve sustainable maximum pollutant reductions. Virginia regulations require that “[a]t all times, including periods of startup, shutdown, soot blowing and malfunction, owners shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with air pollution control practices for minimizing emissions.”

9 VAC 5-40-20.E. Although Condition 42 of the proposed SOP contains this regulatory language, the emission limits in the SOP fail to reflect this requirement.

SO₂ Control

Given the above regulatory requirement, no emission limits can be established that allow less than the optimum use of the trona control system. Therefore, even under scenarios where the plant can emit at greater levels without causing NAAQS violation, e.g., when it operates only one or two boilers, Mirant must use trona to minimize emissions to the extent practicable. The emission limits established in the permit must reflect this optimum use of the trona system. The lb/MMBtu limit for any operating scenario allowed in the permit must reflect an upper limit that must be achieved by each boiler at all times of operation. This upper limit must be based on the capability of the trona system to maximize SO₂ reductions. Recent data from PRGS during trona use in 2006 and 2007 (see table below) shows that SO₂ emissions ranging from 0.15 to 0.25 lb/MMBtu are sustainable for extended periods. In addition, more recent data from the facility for operation under the current SOP issued on June 1, 2007 shows that the plant can consistently meet a limit of 0.30 lb/MMBtu. Therefore, the SOP should not permit SO₂ emissions in excess of 0.30 lb/MMBtu for any operating scenario. Conditions 23 through 28 of the proposed SOP must be revised to reflect this limit, unless a lower limit is necessary for NAAQS compliance.

Additionally, given this plant's setting and proximity to residences, Condition 21 should be modified to only allow the combustion of ultra-low sulfur diesel oil in the boilers as an auxiliary fuel, i.e., oil with no greater than 0.05% sulfur. This limitation also serves to reduce particulate emissions from the boilers during oil combustion, e.g., during startup and idling conditions.

Reported SO₂ Emissions with Trona Use at Mirant PRGS

Month		Reported SO ₂ Rate (lb/MMBtu) with Trona				
		Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5
Feb 2006	Average	0.28	0.15	0.22	0.20	--
Mar 2006	Average	--	0.19	0.19	0.22	0.23
Apr 2006	Average	--	--	0.22	0.22	0.23
May 2006	Average	0.35	0.22	0.23	0.25	0.31
Jun 2006 ⁽¹⁾	Average	0.22	0.35	0.44	0.42	0.34
Jul 2006 ⁽¹⁾	Average	0.47	0.46	0.47	0.48	0.50
Aug 2006 ⁽¹⁾	Average	0.47	0.48	0.48	0.48	0.51
Sep 2006 ⁽¹⁾	Average	0.39	0.50	0.51	0.52	0.52
Oct 2006 ⁽¹⁾	Average	0.40	0.44	0.45	0.48	0.49
Nov 2006 ⁽¹⁾	Average	0.47	0.47	0.48	0.49	0.50
Dec 2006 ⁽¹⁾	Average	0.54	0.46	0.49	0.52	0.67
Jan 2007 ⁽¹⁾	Average	0.50	0.50	0.47	0.50	0.49
Feb 2007 ⁽¹⁾	Average	0.53	0.48	0.49	0.48	0.50
Mar 2007 ⁽¹⁾	Average	0.56	0.46	0.49	0.48	0.54
Month		Reported 3-Hour SO ₂ Rates (lb/MMBtu) with Trona				
		Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5
Jul 2007 ⁽²⁾	Minimum	0.16	0.04	--	--	0.16
Jul 2007 ⁽²⁾	Average	0.31	0.32	--	--	0.34
Jul 2007 ⁽²⁾	Maximum	0.45	0.52	--	--	0.53
Month		Reported 24-Hour SO ₂ Rates (lb/MMBtu) with Trona				
		Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5
Jul 2007 ⁽²⁾	Minimum	0.28	0.30	--	--	0.30
Jul 2007 ⁽²⁾	Average	0.31	0.33	--	--	0.34
Jul 2007 ⁽²⁾	Maximum	0.36	0.47	--	--	0.48

(1) Operation under the EPA's ACO issued in June 2006 that allowed SO₂ emissions to vary based on a prohibited dispersion technique, i.e., daily predictive modeling and forecasted meteorological data.

(2) Operation under the State Operating Permit issued by VDEQ on Jun 1, 2007.

Alexandria remains concerned regarding the potential health effects of trona. Based on a recent inconclusive review, Virginia Department of Health recommended that further studies be conducted. Alexandria requests that trona's health effects be assessed in a comprehensive manner as indicated by VDEQ in its July 26, 2006 letter to Alexandria.

Particulate Matter Control

The proposed SOP specifies a particulate matter emission limit of 0.055 lb/MMBtu for all boilers. The same limit is specified for PM, PM₁₀ and PM_{2.5} and the corresponding lb/hour and lb/day limits are based on this lb/MMBtu limit. This limit is a factor of two to five times greater than the facility's stack test results of December 2006 and therefore does not reflect the optimum use of the facility's Electrostatic Precipitators (ESPs). The following are the results from the December 2006 stack tests when trona was in use.

PM: 0.018 – 0.029 lb/MMBtu
PM₁₀: 0.014 – 0.016 lb/MMBtu
PM_{2.5}: 0.012 – 0.013 lb/MMBtu

Given the above results, an emission limit of 0.055 lb/MMBtu for PM, PM₁₀ and PM_{2.5} would be arbitrary, provide an unusually high compliance margin, and may ultimately allow PRGS to increase emissions without appropriate regulatory review. Alexandria understands that the December 2006 stack test is not indicative of continuous ESP performance. However, a compliance margin of two to five times the actual performance is unreasonable. Instead, the PRGS must be required to optimize the ESP performance to minimize emissions at all times and the PM emission limits must reflect such performance. Furthermore, the December 2006 stack test showed that PM₁₀ and PM_{2.5} emissions are a fraction of the total PM emissions, i.e., 75% and 64%, respectively, based on Boiler 3 tests, and 56% and 46%, respectively, based on Boiler 2 tests. Therefore, the emission limits for PM₁₀ and PM_{2.5} must be lower than for total PM, must reflect actual ESP performance, and must be NAAQS compliant.

Condition 11 of the proposed SOP requires a demonstration of ESP control efficiency necessary to meet the PM emission limits. Without adequate PM emission limits, Condition 11 is ineffective and meaningless because PRGS can achieve the prescribed emission limits at low ESP control efficiencies.

Alexandria requests the Board and VDEQ to revise Conditions 23 through 28 and Condition 30 of the proposed SOP and specify pollutant-specific (PM, PM₁₀, PM_{2.5}) emission limits that reflect actual ESP performance for each pollutant, and recalculate the corresponding lb/hour, lb/day and tons/year limits accordingly.

NOx Control

The proposed SOP specifies a NOx emission limit of 0.32 lb/MMBtu for all boilers and the corresponding lb/hour limits are based on this lb/MMBtu limit. While all five boilers at PRGS employ low-NOx burners (LNB), the three base load units (Boilers 3, 4 and 5)

also employ separated overfire air (SOFA) technology for additional NO_x reduction. It is therefore unreasonable to specify an emission limit for Boilers 3, 4 and 5 that is the same as Boilers 1 and 2. The additional NO_x reduction provided by SOFA, i.e., approximately 30 to 40%,⁶ must be reflected in the emission limits. The PRGS must be required to optimize both the LNB and the SOFA technologies to minimize NO_x emissions, and the emission limits must reflect their performance. Alexandria requests the Board and VDEQ to revise Conditions 25 through 28 of the proposed SOP to reflect a NO_x limit of no more than about 0.22 lb/MMBtu from Boilers 3, 4 and 5, i.e., a limit still higher than what has been demonstrated for other pulverized coal-fired boilers retrofitted with LNB and SOFA technologies, such as the Texas Municipal Power Agency's Gibbons Creek plant.

III. Emission Limits are Arbitrary and Unreasonable

The proposed SOP specifies short term emission limits that are inconsistent with the annual limits. Furthermore, the emission limits are based on operational configurations that are unrealistic and without regard to the manner in which the PRGS actually operates. The emission limits in the SOP appear to be strictly based on levels that would demonstrate compliance with the NAAQS. While NAAQS compliance is essential for PRGS, sole reliance on such compliance is unreasonable in that it disregards the actual emissions achieved by the facility. In fact, several of the short term emission limits in the SOP are set so high that they are meaningless because PRGS does not emit at these levels and cannot achieve operational levels inherent in these limits. The following are examples of the arbitrary and unreasonable nature of the limits.

- The lb/hour and lb/day limits for every pollutant, except SO₂, appear to be based on maximum load operation of Boilers 1, 4 and 5 (total 3,247 MMBtu/hr) for 24 hours per day. Similarly, for SO₂, each operational configuration allows 24 hours per day operation at full load for the number of boilers allowed in that configuration. This is unrealistic because PRGS does not operate its boilers at full load for the entire day. This is especially true for the cycling units, i.e., Boilers 1 and 2. The boilers at PRGS routinely reduce load during night time due to lower electric demand.
- The lb/MMBtu limits do not reflect optimized use of the pollution control measures to minimize emissions. As discussed elsewhere in this letter, the actual emissions at PRGS are considerably smaller than the limits in the SOP.
- The short term limits are set so high that the PRGS will quickly exceed its annual limits if it were allowed to emit at the hourly and daily limits specified in the SOP. For example, the CO limit of 2,997.20 lb/hour allows only six (6) days of

⁶ Mirant has claimed a 15% NO_x reduction due to LNB on Boilers 3, 4 and 5, and 5 to 10% reduction due to LNB on Boilers 1 and 2 (presentation to MWAQC, 1/21/05, available at <http://www.mwcog.org/uploads/committee-documents/olxeXfk20050121073747.pdf>). EPA's Fact Sheet on the NO_x Consent Decree claims 40 to 50% NO_x reduction from the combination of LNB and SOFA technologies (available at <http://www.epa.gov/oecaerth/resources/cases/civil/caa/mirantfs.pdf>).

operation before the annual limit is exceeded. Similarly, the PM_{2.5} and PM₁₀ limit of 178.59 lb/hour allows only 76 and 175 days of operation, respectively, and the hourly limits for HCl and HF only allow 122 days of operation before exceeding the annual limits. The short term limits are therefore meaningless because Mirant cannot realistically emit at those levels without jeopardizing year-round operation.

- The tons/year limits for PM, PM₁₀ and PM_{2.5} are much higher than PRGS's current emissions. The proposed SOP appears to allow PRGS to increase emissions without review by the Board and VDEQ.

Alexandria requests the Board and VDEQ to reduce the hourly and daily limits in Conditions 23 through 28 to reflect actual emissions and operations at the PRGS, with a reasonable margin of compliance. Similarly, the annual limits for particulate matter in Condition 30 of the SOP must be reduced to reflect actual performance of the facility.

IV. CEMS for CO and PM Must be Required As Soon As Possible

PM CEMS

Condition 14 of the proposed SOP specifies the requirement to install PM Continuous Emissions Monitoring System ("CEMS"). However, the installation of PM CEMS is deferred until performance specifications and operations requirements are promulgated by EPA and VDEQ has notified PRGS in writing of a deadline to install them. VDEQ seems to have ignored the fact that EPA promulgated the Performance Specification 11 ("PS-11") applicable to PM CEMS on January 12, 2004 (40 CFR 60, Appendix B) and finalized the Procedure 2 (40 CFR 60, Appendix F) for ongoing performance evaluations. EPA's PS-11 specifies the requirements for evaluating the acceptability of PM CEMS at the time of installation and requires site-specific correlation of the PM CEMS response against manual gravimetric Reference Method measurements. PS-11 also outlines the procedures and acceptance criteria for installation, operation, calculations, and reporting of data generated during a PM CEMS correlation. Several applications of PM CEMS have been certified using PS-11 criteria. Similarly, the Procedure 2 specifies ongoing operations requirements for the PM CEMS using a combination of daily calibration and quarterly audits. The daily calibration includes zero and upscale drift checks, as well as sample volume checks. Quarterly audits, required to be performed no less than two months apart, include Absolute Correlation Audits (ACA) and Sample Volume Audits (SVA). In lieu of an ACA, the facility may perform a Response Correlation Audit (RCA) or a Relative Response Audit (RRA). These installation and operational procedures are currently in place and have been in use for several years.

The following table presents a partial list of facilities that have installed and are currently operating PM CEMS for compliance purposes.

Partial List of Sources Currently Using PM CEMS

Source	PM CEMS Installation Date	PM CEMS Technology
Tampa Electric – Big Bend Unit 4	Feb 2002	Beta Attenuation
Dominion Generation – Mt. Storm Units 1 & 2	Jul 2004	Beta Attenuation
We Energies - Oak Creek Units 5 & 6	Jan 2005	Beta Attenuation
We Energies - Pleasant Prairie Units 1 & 2	Sep 2006	Beta Attenuation
Western Kentucky Energy - Henderson Unit 2	Aug 2005	Beta Attenuation
Western Kentucky Energy - Henderson Unit 1	Feb 2007	Beta Attenuation
Kentucky Utilities Company - Ghent Station		Light Scatter
Kentucky Utilities Company - Mill Creek Station		Light Scatter
Minnkota Power Coop – M.R. Young Unit 2	Jul 2007	Beta Attenuation
DOE Oak Ridge TSCA Incinerator	Dec 2004	Beta Attenuation
Rayonier Pulp Mill - Recovery Boiler	Apr 2003	Beta Attenuation
Kennecott Utah Copper – Primary Smelter	Dec 2005	Beta Attenuation
Sunoco Refinery – FCCU/CO Boiler Stack	Apr 2007	Beta Attenuation

As early as September 2000, EPA identified several manufacturers of PM CEMS in a report titled “Current Knowledge of Particulate Matter (PM) Continuous Emission Monitoring” (EPA-454/R-00-039) utilizing different technologies such as beta attenuation, light scattering, scintillation and electrostatic induction. Based on recent applications, Alexandria believes that beta attenuation and light scattering are the most developed methodologies. EPA identified the following manufacturers in its September 2000 report for these two methodologies.

- | | |
|------------------|---|
| Beta Attenuation | <ul style="list-style-type: none"> - Durag - Mechanical Systems, Inc. - Environment S.A. |
| Light Scatter | <ul style="list-style-type: none"> - Sigrist - Durag - Environmental Systems Corporation - Sick Maihak Inc. - Grimm Technologies - Monitor Labs |

PM CEMS provide the most reliable data for compliance purposes on a continuous basis. Without PM CEMS, the only available data would be from periodic stack tests, which are not reliable for establishing continuous compliance. Based on the current experience with certified PM CEMS and given the availability of EPA’s performance specification and quality assurance procedures, there is no reason to defer the installation of PM CEMS at PRGS. Alexandria requests the Board and VDEQ to require the installation of PM CEMS as soon as possible, but no later than six months from the SOP issuance date.

CO CEMS

Condition 15 of the proposed SOP requires the installation of CEMS for monitoring CO emissions. However, the SOP allows PRGS up to twelve months for the installation.

The PRGS currently operates CO CEMS at the facility. Alexandria fails to see the rationale for allowing twelve months to meet this requirement. The CO CEMS at the facility must be calibrated and the performance evaluations must be conducted as soon as possible. Alexandria requests the Board and VDEQ to require the PRGS's CO CEMS to be used for compliance purposes immediately upon calibration, but no later than three months from the SOP issuance date.

V. Trona is Not a Particulate Matter Control

Condition 5 of the proposed SOP stipulates that Mirant shall use dry sorbent injection (trona or equivalent) as a means to control particulate matter (PM) emissions from the facility's boilers. Dry sorbent use is not a PM control measure for the boilers. On the contrary, dry sorbent use involves the injection of additional PM, thereby increasing the PM loading in the exhaust duct. Mirant uses as much as four (4) tons per hour of trona for each boiler to achieve the required level of sulfur dioxide control. This has a great potential for increasing the PM emissions from the boilers, including PM₁₀ and PM_{2.5}.

Alexandria has analyzed several months of opacity data from all five boilers at the PRGS. The data reflect actual in-stack Continuous Opacity Monitoring System (COMS) readings during operations both with and without the use of trona. The following table shows that in-stack opacity increased for every boiler due to the use of trona by as much as 110 percent. Given that opacity is an indicator of particulate matter emissions, especially fine particulate matter, Alexandria believes that trona contributes to PM emissions increases. The use of trona should not be listed in the SOP as a PM emissions control.

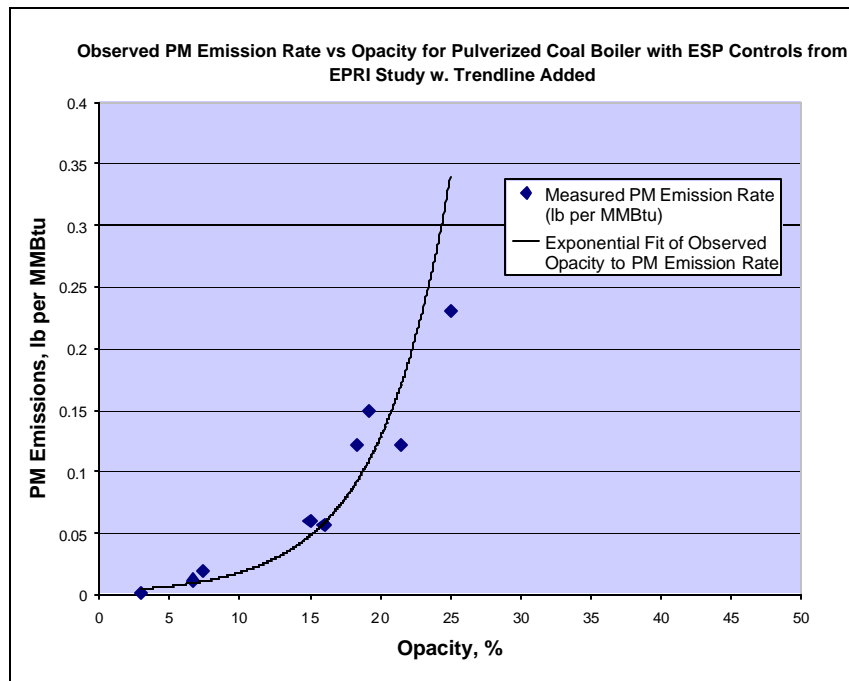
Average Stack Opacity With and Without Trona Use

Boiler	Average Opacity ⁽¹⁾		% Increase in Opacity
	Pre-Trona (Jun-Aug 2005)	Post-Trona (Jun-Aug 2006)	
1	2.86	6.03	110.8%
2	4.16	6.76	62.5%
3	3.62	3.74	3.3%
4	2.61	3.10	18.7%
5	2.55	4.10	60.8%

(1) Based on a summary of 20,000 data points reported by Mirant for stack opacity, which is a surrogate for particulate matter emissions.

The figure below shows a curve fit between observed emission rates and opacity for testing of a pulverized coal boiler, obtained by Electric Power Research Interest Group, and reported by U.S. EPA.⁷ These data clearly show that opacity positively correlates with PM emissions. Of particular concern to Alexandria is the fact that opacity is closely related to fine particulate matter in the size range of about 1 µm. Therefore, any increase in opacity is very likely related to increases in PM_{2.5} emissions.

⁷ "Current Knowledge of Particulate Matter (PM) Continuous Emission Monitoring," US EPA-454/R-00-039, September, 2000



In response to Alexandria’s recent request for data and analyses relating opacity increases to either increases or decreases in PM emissions, VDEQ wrote that it has “*determined that the information that you have requested cannot be found or does not exist in the records of the Department of Environmental Quality*” and that the VDEQ is “*not aware of another source of the information you requested.*” VDEQ also wrote that the “*Department is neither aware of nor in possession of the any documents, studies, or analyses relating the two or discussing the effect of increased opacity on emissions of total PM.*” Yet, VDEQ appears to agree with Mirant’s claim that the December 2006 stack test demonstrated a reduction in PM emissions due to the use of trona. On the contrary, the December 2006 stack test is inadequate to make such a claim. First, the comparison of PM emissions with and without trona was only performed for one boiler that showed the smallest increase in opacity, i.e., Boiler 3. No other boiler was tested for this purpose. Second, the stack test reflects a one-time demonstration under controlled circumstances that are not representative of routine emissions. This is evidenced by the fact that Mirant has requested a PM emission limit of 0.055 lb/MMBtu, i.e., a limit that is two to five times higher than the actual stack test results. Additionally, and perhaps most importantly, the stack test results without trona use are based on a dismal performance of the cold-side ESP (CSEP3), i.e., an average PM control efficiency of only 53%. Such low control efficiency represents faulty performance of CSEP3 and resulted in higher PM emissions during the tests when trona was not in use. In contrast, the CSEP3 control efficiencies during the tests with trona ranged from 89% to 94%, which are more representative of the actual capability of CSEP3. Therefore, while the stack test with trona may reflect accurate emissions from Boiler 3, a comparison of these emissions with the results without trona is flawed and cannot be used to claim PM reduction due to trona use. Alexandria requests the Board and VDEQ to remove the reference to dry sorbent injection as a means to control PM emissions in Condition 5 of the proposed SOP.

VI. Health Effects of Trona Must be Studied

VDEQ indicated in its July 26, 2006 letter to Alexandria that a comprehensive evaluation of health effects of trona will be performed. Virginia Department of Health recently completed an inconclusive review and recommended that further studies be conducted. Alexandria requests that trona's health effects be assessed in a comprehensive manner.

Of significant health concern to the residents of Alexandria is the presence silica in trona. The Material Safety Data Sheet ("MSDS") prepared by Solvay Chemicals, Inc., the supplier of trona used by the PRGS, indicates that trona contains up to 2 percent silica. Silica is a carcinogen and the State of California has determined that it is known to cause cancer. Furthermore, repeated exposure to respirable size particles of crystalline silica, the type of silica in trona, can cause adverse health effects such as silicosis, a progressive lung disease.

VII. Alternate Sorbent Must Not be Pre-Authorized

It appears from the VDEQ's latest inspection report on the PRGS facility dated October 4, 2007, that Mirant is pursuing the testing of sodium bicarbonate for SO₂ emission control. While Alexandria is not opposed to such testing, the City strongly believes that Mirant should notify and receive authorization from VDEQ and the Board and that it should submit a detailed testing protocol for approval by VDEQ before the test. Specifically, this protocol should include: (i) characteristics of the tested sodium bicarbonate powder such as particle size analysis, amount required for the tests and associated handling method; (ii) duration of the testing and potential impacts on the environment and public health; (iii) PM₁₀ and PM_{2.5} stack tests to establish ESP performance with the use of sodium bicarbonate; and (iv) detailed set up of testing equipment. Alexandria further requests that the testing results be made available to the Board, VDEQ, the City and the public.

If Mirant decides to replace trona with sodium bicarbonate on a permanent basis, a complete and thorough analysis regarding the impact on emissions and the facility's SOP must be completed prior to implementation. Since this replacement would be a change in the method of operation, Mirant must apply for a pre-construction permit prior to its use. For example, the use of sodium bicarbonate may allow PRGS to increase operations while meeting SO₂ emission limits, thereby increasing emissions of other pollutants such as NO_x, CO, PM₁₀ and PM_{2.5}. Without adequate review and a pre-construction permit, the proposed SOP must not be used to pre-authorize the use of any sorbent other than trona.

VIII. Mercury Emission Limits Must be Specified

Condition 37 of the proposed SOP requires PRGS to demonstrate annual compliance with mercury ("Hg") limits. Yet, Conditions 23 through 28 and Condition 30 of the proposed SOP do not specify any Hg limits. Using the most recent 23 months of available data from August 2005 through June 2007, i.e., during the applicable baseline period,

Alexandria performed the following calculation of Hg emissions based on the average actual heat input during this period.

Average Annual Heat Input	= 14,535,332 MMBtu/yr
Hg Emission Factor	= 2.53×10^{-6} lb/MMBtu (Mirant's TRI Report)
Annual Hg Emissions	= 37 lb/yr

Alexandria requests the Board and VDEQ to specify the above Hg emissions as a limit in Condition 30 of the proposed SOP. While the above calculation is based on 23 months of data, and the use of a complete 24-month period would be more appropriate, the 24-month calculation is not likely to be significantly different.

IX. The SOP Must be Practically Enforceable

Virginia regulations require that the SOP must be enforceable as a practical matter. 9 VAC 5-80-850.F. The regulation requires the SOP to specify discrete emission standards (limits) and relevant conditions necessary to enforce these emission standards. To make the emission limits practically enforceable, VDEQ must specify the following as a minimum.

- Limits on production rates and raw material usage, i.e., hourly, daily and annual coal throughput or heat input rate, along with coal specifications. Condition 1 of the proposed SOP specifies the maximum rated capacities that are higher than the PRGS's current SOP dated June 1, 2007. VDEQ must explain the rationale for this increase in heat input rates. Also, while VDEQ states in the SOP that the rated capacities are for informational purposes only and do not form enforceable conditions, these capacities have been used to calculate the proposed emission limits. Therefore, Alexandria requests that the boiler capacities be made enforceable, along with adequate recordkeeping and reporting, to provide a practical way of limiting emissions. Similarly, the limit on the coal sulfur content in Condition 7 has been relaxed from a maximum value of 0.9% in the June 1, 2007 SOP up to a maximum of 1.2% and an average of 1.0% in the proposed SOP, without any rationale for this change. Higher sulfur content will require greater trona use to meet the SO₂ emission limits and will increase particulate matter emissions. Alexandria requests that the coal sulfur content be limited to a maximum value of 0.9%.
- Pollution control operating parameters and the minimum control efficiencies of all pollution controls, e.g., trona injection rate and percent SO₂ control, ESP operating parameters and percent PM₁₀/PM_{2.5} control, LNB/SOFA operating parameters and percent NO_x control, and the rate and frequency of water/surfactant application for fugitive dust control.
- Continuous emissions monitoring, e.g., in-stack CEMS for SO₂, NO_x, PM and CO.

- Limits must be specified for the number of startups and shutdowns, and emissions during startup and shutdown must be quantified and modeled. This includes emissions generated during “idling” of boilers when no power is being produced. The Board must ensure that any emissions during startup, shutdown and idling are subject to pollution control and abatement requirements at all times, and that sufficient logs are maintained to document the occurrence of these events.
- The proposed SOP lists various boiler combinations as separate operating scenarios along with different SO₂ emission limits for each scenario. Determination of compliance under this scheme, where PRGS can change operating scenarios from day-to-day, or during any given day, is simply cumbersome. Moreover, allowing Mirant to uniquely design SO₂ emission rates for each scenario is a deviation from Virginia’s regulation requiring emissions to be minimized to the greatest extent possible by the facility’s control technology, in this case the trona injection. 9 VAC 5-40-20.E. Instead, Alexandria recommends that the comprehensive SOP should be streamlined to address worst-case operating conditions that specify the number of units allowed to operate at maximum, minimum and mid-load at any given time. This includes specification of discrete emission limits that are based on optimizing pollution controls and that apply during all hours of operation.
- The initial stack testing requirement for PM₁₀ and PM_{2.5} in Condition 33 and the continued stack testing requirement on a limited basis in Condition 37 are inadequate to assure compliance. Alexandria recommends that stack tests for PM₁₀ and PM_{2.5} must be required every six months during the first two years. If the semi-annual results show continuous compliance, then the limited testing per Condition 37 can be implemented wherein either 2 or 3 boilers are tested every alternate year.
- The reporting requirements of the proposed SOP must be revised to require Mirant and/or VDEQ to make the PRGS’s emissions and operational data available for review by the public without the need for a FOIA request. Alexandria recommends that PRGS’s monitoring data, including stack test results, CEMS data, fuel records and ash handling data, be available to the public via Internet access such as a file transfer protocol (“ftp”) website.
- Ironically, Condition 19 of the proposed SOP stipulates significantly more stringent compliance assurance monitoring requirements on the silo baghouse than Condition 12 sets for the ESPs. The ESP’s readings of secondary voltage and current should be relayed to the PRGS control room continuously. All measurements should be averaged and recorded on a six-minute basis to allow correlation with opacity measurements.

X. VDEQ Must Complete NSR Analysis for the Past Projects

VDEQ indicated in its letter to Alexandria dated July 26, 2006 that it was “*evaluating the applicability of NSR*” to the installation of trona injection and that it would “*complete this*

review and make appropriate recommendations relating to NSR prior to issuance of a draft State Operating Permit.” No such analysis has been provided to date. However, given the proposed SOP for PRGS, Alexandria has reason to believe that VDEQ has completed its review of NSR applicability to trona injection, as well as to the installation of low-NOx burners (LNB) and separated overfire air (SOFA) technology, and requests VDEQ to share its findings. Using data available from the PRGS, Alexandria’s analysis of these past projects indicates that major NSR was triggered and that PRGS should have applied for a received NSR permits. Under NSR regulations, PRGS must have applied Best Available Control Technology (BACT) and/or Lowest Achievable Emission Rate (LAER), as applicable to the pollutants in question, i.e., CO, PM₁₀ and PM_{2.5}. For example, based on recent BACT/LAER determinations for coal-fired boilers, stringent emission limits of no more than 0.01 lb/MMBtu for PM and 0.20 lb/MMBtu for CO should be required. In addition, VDEQ’s analysis shows that VOC emissions also increased due to these projects and must have been reviewed at the least under Virginia’s minor NSR regulations.

Mr. Richard Weeks of VDEQ wrote in a recent communication dated November 5, 2007 to Ms. Elizabeth Chimento, an Alexandria resident, that the NSR review “*was still in process in earlier 2007 but was overtaken by events. Once DEQ was directed by the State Air Pollution Control Board in April of 2007 to public notice a State Operating Permit with an annual limit for sulfur dioxide of 3813 tons, it was apparent that this cap on sulfur dioxide emissions along with the various operational limits imposed by the permit would make the new source review determination on TRONA moot. New source review is conducted to determine whether an activity should result in a permit requirement for new controls or emission limits because the activity is projected to cause a significant emissions increase in criteria pollutants above historic levels. The operational limits and stringent annual limit on emissions of sulfur dioxide imposed by the state operating permit effectively capped emissions from the facility to below historic levels such that no further action on new source review was necessary.*” This is a faulty argument in that the NSR is a pre-construction permitting program and a violation of the NSR regulations requires an enforcement action with commensurate penalties, and not a State Operating Permit. Nonetheless, the issuance of the SOP with an SO₂ limit of 3,813 tons/year on June 1, 2007 did not address any of the pollutants that triggered NSR due to trona installation, i.e., PM₁₀, PM_{2.5} and CO. In fact, the currently proposed SOP allows PRGS to increase its PM₁₀ and PM_{2.5} emissions, unlike the stringent limits that would be required in an enforcement proceeding or in a BACT/LAER analysis of a major NSR permit. Therefore, the issuance of the SOP to PRGS does not render the NSR determination moot.

Alexandria requests VDEQ to share its findings of NSR determination on trona installation, as well as on LNB and SOFA installations, and urges the Board to evaluate the proposed SOP limits in light of NSR violations by PRGS. At the least, the SOP limits should be established at levels no greater than the PRGS’s actual emissions during the past 24 months, i.e., Fall 2005 through Fall 2007.

XI. Stack Merger Requires a Pre-Construction NSR Permit

Alexandria understands that the proposed SOP does not address the issue of stack merger. However, should Mirant wish to pursue the stack merger project at PRGS, it must first apply for and secure a pre-construction NSR permit. Furthermore, no dispersion credit must be allowed unless Mirant's application is supported by pollution controls to reduce emissions below current levels.

XII. Specific Issues Raised by the Board

Question 1 *Should Continuous Emission Monitoring Systems be required for all Particulate Matter regulated by the Regulations for the Control and Abatement of Air Pollution and (1) does the Environmental Protection Agency (EPA) have an approved methodology for these systems, and (2) has the EPA certified an in stack instrument for this purpose?*

Response PM CEMS should be required on all boilers at PRGS as soon as possible. PM CEMS provide the most reliable data to demonstrate continuous compliance with the emission limits. As discussed previously in this letter, EPA has promulgated the relevant performance specifications and ongoing quality assurance procedures for PM CEMS. Based on these specifications, EPA-certified PM CEMS are currently in use at many facilities across the U.S.

Question 2 *Should the operating performance of the control equipment for sulfur dioxide (SO₂) be the basis for permit limitations rather than the array of operating scenarios?*

Response Virginia regulations require that emissions sources and the associated pollution control equipment must be operated in a manner so as to minimize emissions. 9 VAC 5-40-20.E. The SO₂ emission limits in the SOP must reflect the capability of the trona system to reduce emissions, and these limits must apply at all times under all operating scenarios. Demonstration of compliance under an array of operating scenarios, each with its own emission limit, is cumbersome and not enforceable as a practical matter. Therefore, a single NAAQS-compliant lb/MMBtu emission limit must be specified for all operating scenarios. Should it be necessary for NAAQS compliance purposes to limit plant operations, such as a restriction on the number of boilers or the hours of operation, these limits must be specified in a separate condition independent of the lb/MMBtu emission limits.

Question 3 *Are the varying SO₂ control rates considered intermittent controls?*

Response Virginia regulations define the varying of emission rates according to ambient concentrations as a prohibited dispersion technique.

9 VAC 5-10-20. The proposed SO₂ emission limits in the SOP are based on a comparison of predicted ambient concentrations with the NAAQS, such that a less restrictive emission limit is specified in cases where predicted ambient concentrations are lower. This method of establishing emission limits is an intermittent control because it does not account for the performance capability of the source and the associated pollution control measure, i.e., the trona injection system. Instead, based on the capability of the trona system, a single lb/MMBtu emission limit that is NAAQS compliant and that applies under all operating scenarios must be specified.

Question 4 *Should permit emission rates for SO₂ be established to ensure the use of Trona (or other sorbent materials), and should the proposed minimum sulfur content requirement be eliminated?*

Response The SO₂ emission limits in the SOP must reflect the use of trona up to the capability of this control measure. However, the SOP must not be used to pre-authorize the use of any sorbent other than trona. Instead, because the use of another sorbent would represent a change in the method operation at PRGS, the facility must apply for and secure a pre-construction permit prior to its use. An analysis of NSR applicability must be conducted as a part of the permitting process.

Alexandria does not see the benefit of specifying a minimum sulfur content of coal in the SOP, and believes there is no need for such a requirement. However, Alexandria is concerned that the SOP proposes to relax the limit on maximum sulfur content from the current 0.9% (per the SOP issued on June 1, 2007) up to a maximum of 1.2% and an average of 1.0%. Higher sulfur content will either lead to greater SO₂ emissions or greater use of trona which will increase particulate matter emissions. Therefore, Alexandria requests that the sulfur content of coal should continue to be limited to the current level of 0.9%.

Question 5 *Should the Clean Air Interstate Rule and Clean Air Mercury Rule requirements be included in the permit?*

Response Virginia regulations stipulate that a permit must be reopened for cause if an additional regulatory requirement becomes applicable during the term of the permit or the permit must be revised to assure compliance with an applicable requirement. 9 VAC 5-80-1000. For a federal (Title V) operating permit, Virginia regulations require that a permit must be reopened for cause within 18 months of promulgation of an additional federal requirement if the permit term has at least three years remaining. 9 VAC 5-80-110.L. While the applicable CAIR and CAMR requirements can be addressed by reopening the permit in the future, such a reopening will require an advance notification to the source, and the same procedure

as being followed now for the issuance of the SOP. However, because the CAIR and CAMR have already been promulgated and their requirements are already known, Alexandria does not see any reason to omit these requirements from the SOP. Instead of reopening the permit at a future date for this purpose, Alexandria prefers to include these rules in the SOP as applicable requirements with a future applicable date. Indeed, the facility's Title V operating permit would have to identify these as applicable requirements if that permit were to be issued at this time.

Question 6 *What changes should be made to the architecture of the permit and the emission limits in the proposed permit?*

Response As previously discussed, Alexandria recommends that the SOP should specify a single NAAQS-compliant lb/MMBtu emission limit for each pollutant that reflects the ability of the emission source and the associated pollution control measure, and that applies under all operating scenarios. Operational restrictions such as the number of boilers or the hours of operation, if necessary for NAAQS compliance, must be specified independently of the lb/MMBtu limits. The lb/hour, lb/day and tons/year limits must then be calculated by applying the lb/MMBtu limits to the operational restrictions to establish NAAQS-compliant mass emission limits.

Question 7 *What changes or additions should be made to the proposed parametric monitoring and (1) does such monitoring obviate the need for Particulate Matter Continuous Emissions Monitoring Systems and (2) what is the commercial availability of these instruments?*

Response Parametric monitoring is essential to ensure proper operation of the source and the associated pollution control measures. As described in this comment letter, Alexandria requests that additional parametric monitoring be required to include enforceable boiler heat input rates, coal firing rates, and trona feed rates. Additionally, continuous ESP monitoring in the control room must be required.

The parametric monitoring does not replace the need for continuous emissions monitoring via CEMS. Parametric monitoring is only an indicator of general emissions performance. The actual emissions data can only be verified via CEMS on a continuous basis. Alexandria requests that in addition to the SO₂ and NO_x CEMS that PRGS currently operates, PM and CO CEMS should be required as soon as possible. The PM CEMS have been certified by U.S. EPA using promulgated procedures and specifications and are commercially available as indicated in this comment letter along with vendor names and facilities currently using it across the U.S.

Once again, Alexandria appreciates the opportunity to provide these comments to the Board and VDEQ on this important matter. Should you have any questions, please do not hesitate to contact William Skrabak at (703) 519-3400, ext. 163.

Sincerely,



Malay Jindal
MACTEC Federal Programs, Inc.



Maureen Barrett, P.E. (Massachusetts)
AERO Engineering Services



William Skrabak
Chief, Division of Environmental Quality
Department of Transportation & Environmental Services
City of Alexandria

cc: The Honorable James P. Moran
The Honorable Tim Kaine
The Honorable L. Preston Bryant, Jr.
The Honorable Richard L. Saslaw, Senate of Virginia
The Honorable Patricia S. Ticer, Senate of Virginia
The Honorable Mary Margaret Whipple, Senate of Virginia
The Honorable Bob Brink, Virginia House of Delegates
The Honorable Adam P. Ebbin, Virginia House of Delegates
The Honorable David L. Englin, Virginia House of Delegates
The Honorable Al Eisenberg, Virginia House of Delegates
The Honorable Brian J. Moran, Virginia House of Delegates
The Honorable Mayor and Members of City Council
Richard Weeks, DEQ
James K. Hartmann, City of Alexandria
Richard Baier, City of Alexandria
Ignacio B. Pessoa, City of Alexandria
John B. Britton, SHSL